Remarks/Arguments

Amendments to the Specification

On page 2, line 12, the header "BACKGROUND OF THE INVENTION" was replaced with the header "SUMMARY OF THE INVENTION" From the content of the text following the header on page 2, line 12, it is clear that the text is directed to a summary of the invention, not to background material. That is, the original header was clearly a typographical error.

Claim Amendments

All claim amendments and new claims are fully supported by the specification for the instant application.

No new matter has been added.

The Rejection of Claims 1-31 Under 35 U.S.C. §102

The Examiner rejected Claims 1-31 under 35 U.S.C. §102(b) as being anticipated by U.S. Published Patent Application No. 2002/0091908 (Ashida et al.). Applicant respectfully traverses the rejection.

Anticipation requires that all of the elements of the claim be taught within the four corners of a single reference.

Ashida does not teach the iterative process recited in Claim 1

Amended Claim 1 recites: "automatically performing an iterative determining process for determining whether the first database includes one or more prerequisite items necessary to determine each of the second item types, the iterative determining process comprising performing a plurality of iterations: wherein each iteration comprises successively automatically reading second item types from the at least one second item type and, for each read second item type, determining whether the first database includes one or more prerequisite items necessary to determine hat second item type, and if the first database does include said one or more prerequisite items necessary to determine said second item type, automatically storing that

second item type in the first database; wherein the iterative determining process is terminated when an iteration does not result in storage in the first database of a second item, from the at least one second item type, which was not previously stored in the first database; and wherein, at the termination of the iterative determining process, the storage of an item type in the first database is an indication that the stored item type may usefully be included in a spreadsheet in accordance with the spreadsheet system model"

For example, the iterative determining process of Claim 1 includes performing a plurality of iterations in which each iteration includes successively reading second item types, and for each read second item type determining whether the first database includes one or more prerequisite items necessary to determine that item type, and if the first database does include the prerequisite items, storing that second item type in the first database. Thus, as recited in amended Claim 1, if the one or more prerequisite items necessary to determine a given second item type are included in the first database, then that second item type is, in that iteration, stored in the first database so that the second item type will contribute to the contents of the first database and may provide a prerequisite item (necessary to determine other second item types) so that further second item types (which could not be determined on previous iterations) may be determined and stored in the first database on subsequent iterations.

In contrast, Ashida describes a method and system for database management for data mining in which customer data and data definition information are processed in order to provide model candidate data, which are displayed and acted upon by a user, and in which a model candidate with the least mean square error value can be selected in a model selection step. Ashida is silent regarding the iteration process recited in Claim 1.

As set out in amended Claim 1, the iterative determining process is terminated when an iteration does not result in storage in the first database of a second item which was not previously stored in the first database. Further, amended Claim 1 specifies that, at the termination of the iterative determining process, the storage of an item type in the first database is an indication that the stored item type may usefully be included in a spreadsheet in accordance with the spreadsheet system model. Ashida has no such teachings.

The invention recited in Claim 1 enables construction of a first database in which first and second item types (as defined in Claim 1) may be stored, in which second item types can be added to the database by an automated iterative determination process, as set out above, and in which stored second item types may act as prerequisite items for allowing further second item types to be determined and stored in the first database as a result of further iterations. Ashida is silent regarding these steps. Specifically, no such iterative determination step is disclosed or suggested by Ashida et al.

In the Office Action of July 9, 2008, the Examiner stated: "For claim 4, Ashida *et al* teaches... incorporating an iterative process of reading said second item types not stored in the first database whenever said second item type is stored in the first database [store speculation data before user read, 0036]." We respectfully submit that paragraph 36 of Ashida *et al* referred to by the Examiner does not in any way disclose or suggest an iterative determining process as defined in amended claim 1. In particular, no reasonable interpretation of "storing speculating data before user read" or words to this effect in paragraph [0036] of Ashida *et al* can be considered to be a disclosure or suggestion of the iterative process as defined in Claim 1. Further, Ashida does not disclose or suggest any iterative process in which the output from one iteration can be used as newly available data which is used to perform a determining step in the next and/or subsequent iterations.

Regarding a possible iterative process, Figure 7 of Ashida includes a loop with blocks 704, 705 and 706. However, this loop clearly refers to a process in which the various model candidates are validated, with the loop indicating that if not all model candidates have been validated then validation of a further model candidate proceeds. This effectively constitutes a counting loop which counts through the model candidates. Figure 7 cannot be considered to disclose, or suggest in any manner, an iterative process as recited in Claim 1, in particular an iterative process in which the output from one iteration can be used as newly available data which is used to perform a determining step in the next and/or subsequent iterations.

In the Office Action dated July 9, 2008, the Examiner also stated: "Ashida et al clearly teaches a unit to generate the model from the user data and a processing unit to output the result, which in turn teaches automation."

However, Ashida clearly does not teach the iterative process as recited in Claim 1. In particular, the iterative determining process including "if the first database does include said one or more prerequisite items necessary to determine said second item type, storing that second item type in the first database," which means that during the next iteration the second item type will be stored in the first database, and may constitute a "prerequisite item" for a different second item type, so that the output of each iteration can form input for the next iteration. Thus on each iteration the total input (available from the first database) is augmented by the output of previous iterations. Nothing in Ashida, in particular, paragraph 0036 or teaching "a unit to generate the model from the user data and a processing unit to output the result," teaches such an iterative determining process.

Assuming *arguendo* that Ashida did describe an automatic iterative process, which is not true, the disclosed method would not require the significant amount of user input disclosed throughout Ashida. The discussion and drawings presented in Ashida clearly envisage a considerable degree of user interaction, for example, 105 of Figure 12, that is incompatible with an automatic iterative process, for example, as recited in Claim 1. In the automatic iterative process of Claim 1 it would make no sense to have the user observing the process, possibly changing it, and providing required input, before the process had run to completion.

Further, an automatic iterative process requires termination conditions to avoid the iterative process continuing indefinitely. No termination conditions for an iterative process, with the possible exception of the end of the counting loop described above, are disclosed in Ashida. This further shows that no process in which the output from one iteration can be used as newly available data for the next iteration is taught by or contemplated by Ashida.

In contrast, as recited in amended Claim 1, to determine when the iterative determination process has ended, and thereby to avoid the iterative process continuing indefinitely, a termination condition is included; specifically, "the iterative determining process is terminated

when an iteration does not result in storage in the first database of a second item which was not previously stored in the first database" That is, the iterative determining process is terminated when an iteration is performed which does not result in storage of at least one more second item in the first database, since if no change is made to the first database, the results of any next iteration will be the same as the last, and further iterations will not be required. No such termination condition of an iterative process is disclosed or contemplated in Ashida.

Assuming *arguendo* that had it been the intention of Ashida to describe an iterative process of this type, which is not true, it would be expected that consideration would have been given in Ashida to the possible problems of contradictory conditions and infinite loops and how do address such problems. The present application (Example 4 and the associated text, pages 20-21) illustrates how an iterative process might encounter an unavoidable logical inconsistency (which would cause an infinite loop) if the conditions that create different item instances are dependent but mutually exclusive. The present invention as recited in Claim 1 handles such inconsistency by adding to the first database (the Item Instance Database in the described embodiment) but never deleting from it. It is explicitly recognized that the process could thereby produce some redundant Instances, but that this deficiency is more than offset by the usefulness of having an iterative process that does not fall into an infinite loop. Ashida is completely silent on this critical matter.

It is therefore clear that in addition to there being no explicit disclosure in Ashida of the iterative determination process of amended Claim 1, no such process was contemplated or is possible in Ashida, since highly relevant factors, such as termination conditions, avoidance of infinite loops, and iteration without user input, are not touched upon.

Furthermore, Ashida clearly does not relate to a computer implemented method for processing data for a spreadsheet system model, and does not teach Claim 1 steps such as determining items and storing them into a database such that the storage of an item type in the first database is an indication that the stored item type may usefully be included in a spreadsheet in accordance with the spreadsheet system model.

Further, since Ashida does not relate to spreadsheet system modelling, one skilled in the art could not, without hindsight, look to Ashida for information on how to provide a computer implemented method for processing data for a spreadsheet system model. That is, even if the skilled person were to review Ashida, the invention as claimed in amended Claim 1 would not be taught or suggested, for the reasons set out above.

Advantages of the method recited in Claim 1

As discussed above, Claim 1 recites a computer implemented method for processing data for a spreadsheet system model which includes an iterative "feedback" determining process for determining which of the second item types included in the model can be determined so that a useful corresponding spreadsheet entry may be provided in a spreadsheet to which the model relates. The use of such an iterative determining process is considered novel and inventive in the field of spreadsheet system modelling.

For example, a typical spreadsheet system model, such as that used in Excel, uses an acyclic tree structure, and failure to observe the acyclic relationships causes circularity errors. In contrast, the method of Claim 1 does not assume an acyclic structure. In Claim 1, it does not make any difference in which order items of the second item type are determined in the determining step. Eventually, by the iterative determining process, all second item types for which the necessary prerequisite items exist are stored in the first database. The iterative determining process, in storing second items in the first database, is also an iterative process for storing second items which may comprise prerequisite items, and therefore iteratively generates a store of prerequisite items. Thus, if in a first iteration a first second item type is not stored in the first database because its prerequisite items do not exist, the first second item type can still be stored in the first data base if as a result of a subsequent iteration provided its prerequisite second item type(s) is/are determined and stored in the first database.

Thus the method of Claim 1 can involve numerous iterations until the determining process is completed and all determinable second item types are stored in the first database or until second item types which can be determined are stored in the first database and those which can never be determined (because no amount of iterations can provide the necessary prerequisite

items in the first database) are not stored there. Accordingly, the relationships between a second item type and its prerequisite items can be made simple, and are not dependent on definitions or rules which directly relate the second item type to input data.

With the present invention there is therefore enhanced flexibility, compared to spreadsheet models which rely upon acyclic tree structures, when creating a model specification and/or altering an existing one. In spreadsheet models which rely upon acyclic tree structures there are defined procedural steps for creating a model specification, and creating a new model specification requires a different and more complicated implementation involving changes to the defined relationships between items and their prerequisites, and/or in the order in which items must be evaluated in order to assess whether the necessary prerequisites for a given item type exist.

In contrast, in Claim 1, the spreadsheet model can be changed, for example by adding a second item type, and the prerequisites can be simply defined by reference to existing second item types without the need to define the full multi-layer relationship between the new second item type and input data, and without the need to carefully work out which items must be evaluated before the new second item type, and which after the new second item type. Thus greatly enhanced flexibility and convenience can be provided. In some fields, such as financial modelling, this flexibility is extremely useful, because it is often difficult or impossible to predict what combination of item types will be available as input data and what items need to be determined from those items. The iterative, "unstructured", approach of the present invention is believed to be counter-intuitive to the person skilled in the art of spreadsheet system models, who is used to the more formal structured approach of models based on acyclic tree structures.

For all the reasons noted above, Ashida fails to teach each and every element of Claim 1. Therefore, Claim 1 is novel with respect to Ashida. Claims 3-31 and 33-35, dependent from Claim 1, also are novel with respect to Ashida.

Applicant courteously requests that the rejection be removed.

The Rejection of Claims 5-7 and 9-14 Under 35 U.S.C. §103

The Examiner rejected Claims 5-7 and 9-14 under 35 U.S.C. §103(a) as being unpatentable over U.S. Published Patent Application No. 2002/0091908 (Ashida et al.) and in view of U.S. Patent No. 6,438,547 (Mehr et al.). Applicant respectfully traverses the rejection.

Applicant has shown that Ashida fails to teach every element of Claim 1. Nor does Ashida suggest or motivate all the elements of Claim 1. Mehr does not cure the defects of Ashida with respect to Claim 1; therefore, Claim 1 is patentable over the cited references. Claims 5-7 and 9-14, dependent from Claim 1, enjoy the same distinction with respect to the cited references.

Applicant courteously requests that the rejection be removed.

The Rejection of Claims 26-31 Under 35 U.S.C. §103

The Examiner rejected Claims 26-31 under 35 U.S.C. §103(a) as being unpatentable over U.S. Published Patent Application No. 2002/0091908 (Ashida et al.) and in view of U.S. Published Patent Application No. 2002/10049749 (Helgeson et al.). Applicant respectfully traverses the rejection.

Applicant has shown that Ashida fails to teach every element of Claim 1. Nor does Ashida suggest or motivate all the elements of Claim 1. Helgeson does not cure the defects of Ashida with respect to Claim 1; therefore, Claim 1 is patentable over the cited references. Claims 26-31, dependent from Claim 1, enjoy the same distinction with respect to Claim 1.

Applicant courteously requests that the rejection be removed.

Conclusion

Applicant respectfully submits that all pending claims are now in condition for allowance, which action is courteously requested.

Respectfully submitted,

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